REMARKS/ARGUMENTS

Claims 51-75 and 82-88 are pending in this application, of which claims 51, 63, 82, and 88 are independent. Applicant respectfully requests favorable reconsideration and allowance of all pending claims in view of the remarks detailed herein.

The courtesies extended to Applicant and Applicant's representatives by Examiner Sefcheck at the interview held on July 24, 2008, are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below and constitute Applicant's record of the interview.

CLAIM AMENDMENTS

By this Amendment, Applicant amends claims 51, 52, 54, and 63-66. Applicant adds new claims 82-88. Claims 76-81 are canceled without prejudice to, or disclaimer of, the subject matter recited therein.

The amendment to independent claims 51 and 63 specifies that SDUs are packed and fragmented for mapping into a PDU, and specifies that the SDUs mapped to a PDU are associated with a certain user connection. Support for the subject matter added to these claims may be found in, for example, Figures 9 and 13 and pages 26-29 of the specification.

The packing and fragmenting operation is described in detail on, for example, page 24, lines 17-19, which states that, "The data packets are advantageously packed and fragmented in a coordinated manner and in the most efficient way possible to maximize the bandwidth available from frame-to-frame." As described starting on page 20, line 10, "The SDUs are distinguished

by their type of message format and their connection identification information, among other things as provided by the classification module." Thus, SDUs associated with a connection are mapped to PDUs, such that a PDU is formatted to include SDUs from the connection identified by the "connection identification information."

Applicant has also amended the claims to clarify the use of packing subheaders associated with SDUs. In particular, several of the claims are amended to recite that the packing subheader indicates the length of the SDU. This subject matter is supported by the specification in, for example, Figure 14 and the accompanying text. As further described beginning on page 2, line 24, "Within the above aspects, the plurality of SDUs may have different lengths, with a length of at least some of the SDUs reflected in respective packing subheaders."

REJECTIONS UNDER 35 U.S.C. § 103

In section 2 on pages 2-8, the Office Action rejects claims 51-56, 63-68, and 76-81 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,918,034 to Sengodan et al. ("Sengodan") in view of U.S. Patent No. 6,608,841 to Koodli. Applicant respectfully traverses this rejection in view of the following remarks.

Independent claim 51 recites "A node for use in a communications system that packs and fragments service data units (SDU) for mapping into protocol data units (PDU), each PDU having a variable-length ..... the length of the PDU being <u>dynamically established dynamically according to bandwidth currently allocated to the user connection</u>" (emphasis added). Independent claim 63 contains a similar recitation.

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The above-quoted subject matter added to claims 51 and 63 finds support throughout the specification as filed. As stated on page 17, lines 19-23, "The communications processors of both the base station and the nodes create PDU payloads and PDU headers to be transmitted and retrieve SDUs from PDUs" (emphasis added). "An exemplary downlink PDU format 800 may include a standard downlink PDU header 810 and a variable length PDU payload 820." Id.

The specification further describes the communications processors on, for example, page 21, lines 12-16, which describes the operation of the bandwidth allocation/processor bandwidth requests/fragmentation/packing module 935, illustrated in Figure 9. This section of the specification states that, "In another embodiment, the packing and fragmentation occur in conjunction with bandwidth allocation processes and algorithms to most efficiently utilize the communications link at any one time." ... "Numerous queuing techniques and QoS systems may be implemented, but certain embodiments should be flexible and allow the system controls to be adjusted as bandwidth demands change." Id. As further described on page 27, lines 25-30, "Through this process, PDUs are created from SDUs via a fragmentation and coordinated packing process." "By coordinating the fragmenting and packing processes that occur in the bandwidth allocation process rather than the convergence sublayer, the advantages of packing and fragmentation are optimized and maintained whereas the efficiency gained by both processes may be lost if they were performed independently." Id.

Applicant respectfully submits that Sengodan fails to disclose, teach, or suggest "wherein the length of the payload area of the protocol data unit is established dynamically according to

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bandwidth currently allocated to the user connection," as recited in claim 51 and similarly recited in claim 63.

The system of Sengodan provides "encryption and authentication of a mini-packet in a multiplexed real time protocol (RTP) payload." See col. 5, ln. 44-49. Sengodan discloses two examples, one in which the packet is 20 byte (col. 5, ln. 60) and one in which the packet is 10 bytes (col. 5, ln. 66). Sengodan, however, contains no teaching that the length of the PDU is established <u>dynamically according to bandwidth currently allocated to the user connection</u>.

Applicant respectfully submits that Koodli also fails to disclose, teach, or suggest the above-quoted and described subject matter. As illustrated in Figure 1, the system of Koodli includes a source terminal 20 and a destination terminal 30 connected by a bandwidth-limited link 10. See col. 4, ln. 61-66. As further described in Koodli, "If the bandwidth-limited link 10 is an IP-based network, the rate that data packets are injected via the IP-based network 10 and the outward flow of data packets are controlled and managed by the NIC 24 to avoid congestion and to limit bandwidth usage of data packets in the IP-based network 10." See col. 5, ln. 27-31.

Thus, the system of Koodli avoids congestion by merely throttling the rate at which packets are outputted, a change that has no effect on the length of the payload area of protocol data units. Furthermore, throttling of data packet output is done on a global basis, not based on the bandwidth allocated to the <u>specific user connection</u>. Accordingly, Koodli fails to disclose, teach, or suggest that the length of the PDU is established <u>dynamically according to bandwidth currently allocated to the user connection</u>.

Independent claims 51 and 63 further recite "a communications processor configured to pack and fragment service data units associated with the user connection into a protocol data unit." Page 20 describes the operation of the bandwidth allocation/processor bandwidth requests/fragmentation/packing module 935, which stores and sorts SDUs based upon their individual characteristics and various system protocols. See p. 20, ln. 12-17. "This information may pertain to the <u>type of user connection being served</u>, the node the SDU is sent to, the type of SDU, the length of the SDU, the available physical slots in a relevant PDU, as well as many other factors" (emphasis added). Id. As further described in connection with Figure 11 on page 24, lines 11-14, "After convergence, the <u>user data</u> is transferred to the queuing module 1130 for arrangement and storing, similar to that in the base station described above, <u>in preparation for transfer to the bandwidth allocation/create bandwidth request/packing/fragmentation</u> (BCPF) module 1135" (emphasis added). Thus, these sections of the specification together indicate that the packing and fragmentation operations recited in claims 51 and 63 occur for a <u>single user connection</u>.

The text on page 19, starting with line 10 and describing Figure 3 also clearly indicates that the PDUs are formed per user connection. For example: "Figure 3 is a high-level block diagram of the functional modules of an exemplary node. A node 16 may include a communications processor 32, a modem 40, an IF-RF converter 42, an antenna 44, and a connection interface 34 <u>coupled to a plurality of user connections 36</u>".

Still further, the PDU header illustrated in Figure 8 shows a connection identifier field.

This interpretation is further supported by the background of the specification, which provides insight into some advantages provided by the systems recited in claims 51 and 63. In particular, this portion of the specification states, "It is often desirable for data in various formats to utilize the same data links as part of their transmission paths." See p. 1, ln. 28-30. "This is particularly true for links directed to solving the problem of connecting end users to the various communications networks that are the source of data sought by those users, known as the 'last mile' problem." See p. 1, ln. 29-30; p. 2, ln. 1.

Applicant respectfully submits that Sengodan fails to disclose, teach, or suggest "a communications processor configured to pack and fragment service data units associated with the user connection into a protocol data unit," as recited in independent claims 51 and 63. Furthermore, as correctly conceded in page 5 of the Final Office Action, Sengodan does not disclose fragmentation of mini-packets. Thus, Sengodan fails to disclose fragmentation performed in associated with a single user connection.

Applicant respectfully submits that Koodli also fails to disclose, teach, or suggest "a communications processor configured to pack and fragment service data units associated with the user connection into a protocol data unit." The Office Action alleges that Koodli discloses fragmenting service data units for packing into a protocol data unit in column 5, lines 39-65. However, in the cited paragraph, Koodli only mentions that: "Other IP fields such as flags and fragment offset fields, a total length field, an ID field, a time to live field and a protocol field may also be included in such a header.". Applicant respectfully submits that the "fragment offset field" inserted into the header of the packet does not indicate that the packet contains a fragment

of a service data unit associated with a single user connection. As well, Koodli, which relates to compression of headers, contains no disclosure, teaching, or suggestion that fragmentation is performed in association with a single user connection.

To summarize, Sengodan and Koodli fail to disclose, teach, or suggest, alone or in combination, "wherein the length of the payload area of the protocol data unit is established dynamically according to bandwidth currently allocated to the user connection." Sengodan and Koodli also fail to disclose, teach, or suggest, alone or in combination, "a communications processor configured to pack and fragment service data units associated with the user connection into a protocol data unit."

Even if a person of ordinary skill in the art were to attempt to combine the teachings of Sengodan with the teachings of Koodli, such an attempt would not result in the node recited in claim 51 or the base station recited in claim 63. Thus, Applicant respectfully submits that claims 51 and 63 are allowable over the combination of Sengodan and Koodli.

Claims 52-56 depend from allowable claim 51, while claims 63-68 depend from allowable claim 63. Claims 52-56 and 63-68 are therefore allowable based at least on their dependencies. Claims 76-81 are cancelled without prejudice to or disclaimer of the subject matter recited therein.

For at least the forgoing reasons, Applicant respectfully requests that the rejection of claims 51-56, 63-68, and 76-81 under 35 U.S.C. § 103(a) be withdrawn.

In section 3 on pages 8-9, the Office Action rejects claims 57-62 and 69-75 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Sengodan in view of Koodli and further in view of U.S. Patent No. 6,970,941 to Caronni. Applicant respectfully traverses this rejection.

Claims 57-62 depend from allowable claim 51, while claims 69-75 depend from allowable claim 63. Caroni fails to remedy the deficiencies in Sengodan and Koodli described above in connection with the rejections of claims 51 and 63. Thus, claims 57-62 and 69-75 are allowable over Caroni at least by virtue of their dependencies.

For at least the forgoing reasons, Applicant respectfully requests that the rejection of claims 57-62 and 69-75 under 35 U.S.C. § 103 be withdrawn.

NEW CLAIMS

By way of this amendment, Applicant adds new claims 82-88, of which claims 82 and 88 are independent. Claims 82 and 88, contain subject matter similar to that discussed above in connection with the rejection of claims 51 and 63. Thus, Applicant respectfully submits that claims 82 and 88 are supported by the specification and allowable over the publications of record for at least the reasons detailed above.
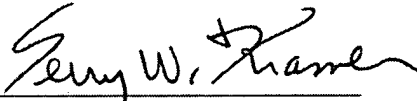
CONCLUSION

While we believe that the instant amendment places the application in condition for allowance, should the Examiner have any further comments or suggestions, it is respectfully requested that the Examiner telephone the undersigned attorney in order to expeditiously resolve any outstanding issues.

In the event that the fees submitted prove to be insufficient in connection with the filing of this paper, please charge our Deposit Account Number 50-0578 and please credit any excess fees to such Deposit Account.

Respectfully submitted,
KRAMER & AMADO, P.C.

Date: September 2, 2008

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